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ABSTRACT

This study identified the existence, types, related procedures, and use of faculty productivity reporting systems currently used by institutions of higher education involved in externally-funded research. Institutional research officers at 200 institutions of higher education were surveyed in an effort to characterize the existing productivity reporting systems of these institutions. These were institutions with the highest levels of total, separately budgeted, science/engineering research and development expenditures. A total of 83 administrators responded. The survey instrument requested information concerning institutional procedures for the methods, frequency, and use of information obtained through faculty productivity reports. Copies of the related institutional policies, procedures, and reports also were requested. Results indicated that the use of faculty productivity reporting systems occurs much less frequently than the federally-mandated systems. Only 68.7 percent of the responding institutions indicated that a formal, periodic method of reporting faculty productivity exists, and of these institutions, 83.6 percent require the reports to be submitted by all faculty. The productivity reports are typically used for internal activities such as tenure evaluation, promotion and merit evaluations and raises, and less frequently for budgeting and planning purposes. There is generally little attempt to correlate faculty productivity measures with financial data. (Contains nine references.) (JB)

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Faculty Productivity Reporting Systems in Research Universities

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This paper was presented at the Thirty-Third Annual Forum of the Association for Institutional Research held at the Chicago Marriott Downtown, Chicago, Illinois, May 16-19, 1993. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Chair and Editor
Forum Publications
Editorial Advisory Committee

Abstract

Despite a tremendous amount of research over the years in the area of faculty productivity, there is no commonly accepted procedure for quantifying faculty productivity, nor an identified mechanism for ensuring accountability to higher education's fiscal supporters based on faculty productivity.

The traditional independent governance of each American university campus has resulted in the development of site-specific sets of productivity measures that serve only the internal evaluation needs of the particular institution.

This study identifies the existence, types, related procedures, and use of faculty productivity reporting systems currently used by institutions of higher education involved in externally-funded research.

Faculty Productivity Reporting Systems in Research Universities

There is no empirical evidence on the current status of faculty productivity reporting systems in American research universities, despite the fact that the literature is filled with differing speculations regarding how faculty productivity should be measured and with multiple criticisms of existing reporting systems.

It is the authors' belief that information gathered from faculty productivity reporting systems is the foundation for the future development of American universities, and that these systems must be valid and accurate to provide reliable information to the sponsors and performers of university functions. The characterization and analysis of existing faculty and productivity reporting systems is a vital first step in assessing the efficacy of existing reporting systems to meet the education and research needs of America in the 21st century. It should provide empirical information that can lead to a new set of measures of faculty productivity that are acceptable to faculty and more useful to government agencies, private sponsors, and the general taxpayer.

It has been suggested that:

> to speak of scholarly productivity the way one speaks of economic productivity is monstrous.. . . Socrates never published, and, if the judges at his trial can be viewed as representing democratic opinion, it is clear that he would not have received good student evaluations from his introductory students (Lawler, 1982, p. 54).

Lawler later conceded that faculty accept quantitative measures of their performance since it is the only type of evaluation that is persuasive to a

democratic audience and it is better than no evaluation at all. He also noted that faculty are aware of the limits of quantification, that they may even despise it, but "they cannot do without it" (1982, p. 55).

In the past, faculty productivity has been analyzed by institutions and funding sources in a number of different ways. Measures of faculty productivity are viewed as methods of ensuring accountability for funding provided to higher education. Missouri Governor John Ashcroft noted "the public has a right to know what it is getting for its expenditure of tax resources.. . . They have a right to know that their resources are being wisely invested and committed" (National Governors' Association, 1986). The U.S. Department of Education (1988), many disciplinary accrediting organizations, and state public officials such as the National Governors' Association (1986) have become involved in the assessment of the activities of postsecondary education, including faculty productivity.

Though such demands for accountability seem to be more prevalent in today's economic crisis, the attempt to measure faculty productivity as a procedure for ensuring accountability is by no means a new phenomenon. In 1916, Birge concluded that teaching nine hours of freshman English was equivalent to teaching 15 hours of freshman algebra at the University of Wisconsin. Haggerty proposed in 1937 that total clock hours per week was a better indicator of faculty load than credit hours or student contact hours. Though the study of the concept of faculty productivity has occurred consistently over the years, how to measure and evaluate faculty productivity is as much of a mystery today as it was in the early 1900s.

Previous studies have examined social, psychological, demographic, and even

physiological characteristics of the individual, as well as occupational/ disciplinary and institutional attributes in an attempt to ascertain determinants of predictors of faculty productivity levels. In almost every case, publication records was at least one, if not the only measure of productivity for these studies. The definition of publication productivity was often further limited to the number of journal articles published.

College and university accrediting associations such as the Southern Association of Colleges and Schools (SACS) have started to place a greater emphasis on the various aspects of evaluation within higher education, including the evaluation of faculty. Included in the SACS Criteria for accreditation (1989) was the statement that:

> An institution must conduct periodic evaluations of the performance of individual faculty members. The evaluation must include a statement of the criteria against which the performance of the individual faculty members will be measured (p. 28).

A study conducted by Chamberlain and Van Daniker (1990), in conjunction with the Governmental Accounting Standards Board, identified a variety of input, output, outcomes and efficiency measures that are relevant to colleges and universities. Most of these measures, however, predominantly dealt with the instructional function of higher education, and few were geared directly toward measures of productivity for individual faculty members. No consideration was given to the research and service functions, or the administrative activities of the faculty.

A general consensus of the output measures necessary for the conduct of these evaluations is not readily available. Studies in the areas of teaching,

service and administration are practically non-existent. Even in the area of research productivity output measures, Rebne (1990) advised that since there is considerable evidence that occupations differ in forms of output, productivity measures should not be restricted to a single channel such as journal articles. However, he added "the literature has yet to produce a universally accepted measure of research performance" (p. 31).

Methodology

Since existing productivity reporting systems have not been characterized and analyzed, it is necessary for the investigators to gather the fundamental information associated with these systems.

Institutions of higher education use a variety of methods to obtain data on faculty productivity. The purpose of this study is to characterize the types, procedures related to, and use of the faculty productivity reporting systems employed by research universities in the United States. Institutional research officers at 200 institutions of higher education were surveyed in an effort to characterize the existing productivity reporting systems of these institutions.

Population Characteristics

The population consisted of institutional research administrators from the 200 institutions of higher education that have the highest levels of total separately budgeted science/engineering research and development expenditures, as reported in the National Science Foundation's (NSF) Surveys of Sciences Resources Series (1989). Of the 555 institutions included in this NSF report, these 200 institutions were identified as comprising 96.67% of the total science/engineering research and development expenditures in 1988. The

remaining 355 institutions in the report accounted for less than 3.33% of these total financed research and development funds in 1988.

These 200 institutions were selected for this study due to the fact that their faculty have the potential of being involved in higher education's three primary functions of instruction, research and public service. Each of these institutions was reported as having science/engineering research and development expenditures in excess of $7.3 million in 1988 (National Science Foundation, 1989).

Procedures for Gathering Data

A survey instrument, entitled "Reporting of Faculty Productivity" was mailed to the directors of institutional research of the 200 institution population. This component of the institution is involved with quantitative studies within the institution, and its staff would be most likely to be knowledgeable concerning the institution's efforts in measuring faculty productivity. Institutional administrators were surveyed in December, 1990, with a second mailing of the survey sent to non-respondents in February, 1991 in an attempt to obtain information related to the character and functions of faculty productivity reporting systems in research universities. A total of 83 (42 percent) of the surveys were returned.

The instrument requested information concerning institutional procedures for the methods, frequency, and use of information obtained through faculty productivity reports. Copies of the related institutional policies, procedures, and reports also were requested.

Procedures for Analyzing Data

The survey instrument contains questions which result in narrative

responses or in data that is nominal in nature. Summaries of the narrative responses are provided. Responses that resulted in nominal data were organized and summarized in frequency distributions. When applicable, the χ^2 test of homogeneity was used to determine if there was any significant difference among different research expenditure-classed institutions', or between public and private institutions' responses to these questions.

The purpose of this study was to identify the types, procedures related to, and uses of faculty productivity reporting systems currently employed by institutions of higher education that are involved in externally-funded research. This study provides documentation of that information for the participating institutions in higher education that are among the 200 institutions of higher education that have the highest levels of <u>total</u> separately budgeted science/engineering research and development expenditures.

Results

The first purpose of this study was to identify the types, procedures related to, and uses of faculty productivity reporting systems currently employed by institutions of higher education that are involved in externally-funded research.

Of the 83 responses to the "Reporting of Faculty Productivity" survey, 43 (52 percent) of the responses were from institutions among the top 100 institutions and 40 (48 percent) were from institutions among the second 100 institutions by research and development funds rank. In terms of public/private classification, 67 (81 percent) of the responses were from public institutions and 16 (19 percent) of the responses were from private institutions.

The "Reporting of Faculty Productivity" survey was analyzed in terms of the level of total separately budgeted science/engineering research and development expenditures, and in terms of public versus private classification. The χ^2 test of homogeneity was used to determine if there was any significant difference among different research expenditure-level institutions, or between public and private institutions, on a series of three questions, including:

Does your institution have any formal, periodic methods of accounting for faculty productivity that are based on factors other than time?

How frequently are faculty productivity reports required to be submitted?

Does your institution have a procedure for correlating faculty productivity measures with financial data?

In every case, the comparison of responses from the top 100 institutions to the second 100 institutions by research and development funds rank resulted in χ^2 values that were not significant at the .05 level.

The comparison of responses from public and private institutions on this series of questions also resulted in χ^2 values that were not significant at the .05 level.

Survey Responses

Existence of formal, periodic methods of accounting for faculty productivity based on factors other than time. Institutions are not required by the Federal government to have any formal, periodic methods of accounting for faculty productivity that are based on factors other than time. Institutions may be required to track faculty productivity measures for other reasons, but of the responding institutions, 68.7 percent indicated the use of

any formal, periodic method, and 31.3 percent indicated that no faculty productivity reporting method exists.

Institutional levels that collect formal, periodic productivity-based information for individual faculty members. The levels within the institution that collect this formal, periodic productivity-based information vary greatly. Of the institutions that do collect this information, 77.2 percent collect it at the academic department level, 64.9 percent at the institutional level, 59.6 percent at the college level, 21.1 percent at the academic program level, 21.1 percent at the organized research unit level, and 5.3 percent at some other level.

Components of the institutional faculty productivity reports. The components of these faculty productivity reports vary greatly from one institution to the next. In some instances, the terminology used for similar types of measures of productivity varied slightly among institutions. For example, institutions frequently use the non-standard terms of pure research, basic research, independent research, and academic research, to describe work which is explanatory in nature and which the Federal government has classified as basic research; unfortunately, since there is no standardization of terms, the authors had to make an assessment of institutional meaning and to place similar types of measures of activity together. The authors collapsed these closely related descriptive measures into one coherent category. Some institutions solely report Student Credit Hour (SCH) generation by faculty member, other faculty productivity reports are built upon the federally-imposed Personnel Activity Reports (PARs), others identify the general areas of instruction, research, service, and administration and allow the faculty

member to elect what type of information is to be included in each area (with examples sometimes given), and still others are broken down into very specific subcategories which indicate to the faculty how the information is to be reported. Some of the examples and specific subcategories identified in these reports are listed in Figure 1.

Faculty required to complete faculty productivity reports. The presence or absence of a faculty member having federal or other external funding has little impact on whether or not faculty are required to complete productivity reports. Of the 68.7 percent of the responding institutions that indicated they use faculty productivity reports, 83.6 percent require them of all faculty, regardless of funding source members. The productivity reports are also required to be completed by faculty being reviewed for promotion (29.1 percent), tenure (29.1 percent), faculty directly funded by federal funds (9.1 percent), faculty directly and indirectly funded by federal funds (9.1 percent), and faculty directly and indirectly funded by any external funds (12.7 percent).

Persons eligible to complete productivity reports for faculty. Of the 68.7 percent of the responding institutions that indicated they use faculty productivity reports, 88.2 percent indicated that the faculty are eligible to complete their own reports. Again, this indicates that faculty are not eligible to complete their own productivity reports at 11.8 percent of the responding institutions. Other persons eligible to complete productivity reports for faulty include Department chairs (49.0 percent), Program directors (25.5 percent), the Dean (19.6 percent), the Department staff (17.6 percent), the Dean's staff (9.8 percent), and Other (19.2 percent).

Instruction
- Courses taught
- # of sections
- Course level
- Class enrollment
- Student credit hours
- Course credit hours
- Course contact hours
- Field work supervision
- Internship supervision
- Honors/independent study
- Off campus courses
- Correspondence courses
- Continuing education
- Cooperative education
- Clinical instruction
- Office hours
- Thesis/dissertation
  - chaired
  - completed
  - committees
- # of students in courses
- # of teaching assistants
- Supervision of T.A.'s
- Curriculum innovations
- Curriculum development
- Advising activities
- # of students advised
- Course evaluations and revisions
- Innovative teaching project undertaken
- Development of new courses
- Restructuring of courses
- Development of instructional materials
- Development of methods of instruction
- # of students completing course
- Teaching evaluations
- Collaboration with colleagues
- Sponsored instructional projects
- Teaching awards and honors
- % of total responsibility
- % time in instruction
- # hours in instruction

Research/Creative Activities
- Refereed journal articles
- Non-refereed journal articles
- Books
- Monographs
- Chapters
- Reports
- Abstracts
- Periodical articles
- Manuals
- Brochures
- Pamphlets
- Bulletins
- Translations
- Reviews
- Papers at meetings
  - invited
  - contributed
  - refereed
  - non-refereed
- Published compositions
- Published plays
- Published poems
- Artistic performances
- Production
- Direction
- Choreography
- Concerts
- Films/broadcasts
- Photographic illustrations
- Published building designs
- Medical drawings
- Software programs developed
- Patents filed, issued & commercialized
- Evaluation of research
- Proposals submitted
- Grants/contracts received
- Unfunded grant applications
- Grants-in-kind
- Fellowships
- Visiting appointments
- Research awards, honors and distinctions
- % of total responsibility
- % time in research/creative activities
- # hours in research/creative activities

Service
- Professional organizations
  - offices held
  - conferences directed
  - committee assignments
- Professional meetings attended
- Editorial boards
- Jurying
- Proposal reviews
- External accreditation review
- Manuscript reviews
- Book reviews
- Institutional service
  - committee service
  - campus governance councils
  - task forces
  - search committees
- Public/community service
  - assistance to government, education, industry, non-profit organizations or individuals
- Extension activities
- Writing references
- Service awards and honors
- % of total responsibility
- % time in service activities
- # hours in service activities

Administration
- Administrative posts
- Administrative responsibilities
- Departmental and college administration - faculty/professional effort apportionment
- Prizes, honors, awards, & commendations
- % of total responsibility
- % time in administrative activities
- # hours in administrative activities

Figure 1. Components of faculty productivity reports.

Completion of faculty productivity reports. Of the 68.7 percent of the responding institutions that indicated they use faculty productivity reports, 28.1 percent elected not to respond to the question regarding what percentage of the faculty productivity reports are actually completed by persons in the various identified categories. Even those that did respond to this question indicated, that in most cases, their responses were merely a guess, since traditionally there is no need to document this information.

Frequency of submission of faculty productivity reports. Of the 68.7 percent of the responding institutions that indicated they use faculty productivity reports, the majority (66.7 percent) responded that they have faculty productivity reports require them to be submitted annually. The next most frequent basis for submission is each academic term (24.1 percent). The remaining 9.2 percent of the institutions that have faculty productivity reports require them to be submitted on a six month, quarterly, monthly, or some other basis.

Offices that receive information based upon the faculty productivity reports. The offices that are most likely to receive faculty productivity reports include the College Dean (83.3 percent), the Department Chair (81.5 percent) and the Vice President/Academic (75.9 percent). Other offices that receive information based upon faculty productivity reports include Institutional Research (38.9 percent), the President (37.0 percent), Program Directors (33.3 percent), Vice President/Research (27.8 percent), Grant/contract Office (22.6 percent), the Regents (22.2 percent), Vice President/Finance (18.5 percent), Federal Agencies (14.8 percent), Coordinating Board (11.1 percent), and Other (3.7 percent).

Use of information received from faculty productivity reports. Of the 68.7 percent of the responding institutions that indicated they use faculty productivity reports, use them, in many instances, for faculty tenure, promotion, performance evaluation and merit raise considerations. This is particularly true at the Department Chair, College Dean, and Vice President/Academic levels. However, many other uses have been developed for the different types of information obtained from some of these faculty productivity reports and are used at various levels internal and external to the institutions including professional development, personnel management, workload assessment, staffing, planning, budgeting, honors, and public relations.

In addition, at least one of the responding institutions indicated that information obtained from faculty productivity reports is being used by various offices in each of the additional following ways:

Department Chair - annual review and assessment of progress toward goals;

Dean - scheduling, program review, teaching loads, administrative responsibilities;

Vice President/Academic - resource allocation, staffing, track teaching/advising/research activities, graduate/undergraduate efforts and professional activities;

Vice President/Finance - OMB Circular A-21 compliance;

Vice President/Research - publication of annual report, distribution of information on funding appropriations, track grant application processes, research activities, and research productivity;

Institutional Research - comparative analysis of workloads, peer university

comparisons, longitudinal and intrainstitutional comparisons, prepare publication profile, conduct productivity and staffing/cost studies;

Grants/Contracts Office - cost analyses, cost proposals, verify expenditures, OMB Circular A-21 compliance, compile report of faculty activity/publications;

Coordinating Board - review institutional reports on effectiveness;

State Agencies - compliance with "12-hour" law, state funding; and

Federal Agencies - compliance with OMB Circular A-21.

But not all faculty productivity reporting systems serve any real purpose. One respondent noted that the information collected is "solely for the file.. . . a total waste of effort!"

Existence of procedures for correlating faculty productivity measures with financial data. The fact that most of the 68.7 percent of the responding institutions that have faculty productivity reporting systems use them predominately for tenure, promotion and merit evaluations, and less frequently for any financial-based planning or decision-making is reflected in the fact that only 34 percent have some procedure for correlating faculty productivity measures with financial data

Procedures for correlating faculty productivity measures with financial data. One of the procedures used by a responding institution to correlate faculty productivity measures with financial data includes a analysis of credit hour/contact hour productivity and major service loads to compare program and department costs. A series of weighting factors for disciplines and course levels are used to address the differences in program costs and complexity. The analyses are then used in budget allocations and in the

allocation of new faculty and staff positions.

Other procedures include the conduct of cost studies based on faculty productivity-based factors including student credit hours, the development of departmental/college profiles for use in annual planning and budgeting processes, cost studies based on teaching and funding models that are used in staff planning and allocation of resources, and analyses of the cost of each course taught.

Summary, Conclusions and Recommendations

The 200 institutions of higher education that have the highest levels of total separately budgeted science/engineering research and development expenditure were surveyed in an attempt to identify the types, procedures related to, and uses of faculty productivity reporting systems currently employed in these institutions. A total of 83 (42 percent) "Reporting of Faculty Productivity" surveys were returned.

Institutions responding to the "Reporting of Faculty Productivity" survey indicated that the use of faculty productivity reporting systems occurs much less frequently than the federally-mandated PAR systems. Only 68.7 percent of the responding institutions indicated that a formal, periodic method of reporting faculty productivity exists. However, at those responding institutions where such productivity reporting systems exist, 83.6 percent require them to be submitted by all faculty.

These faculty productivity reports are typically used by the responding institutions internally for activities such as tenure, promotion and merit evaluations and raises, less frequently for budgeting and planning purposes, and are less likely to be used externally as any measure of accountability.

There is little attempt by these institutions to correlate these faculty productivity measures with any financial data.

While the Proxmire "Golden Fleece Awards" have, in the past, made a mockery of the federally-funded research that is conducted by universities, and recent news reports concerning the Stanford University indirect cost scandal leads the general public to believe that universities are misusing federal funds, it becomes even more important that institutions of higher education and their faculty make every effort to counter these negative concepts and prove their true value and worth to our society. These current criticisms of higher education by legislators, the press, and the public could be rebutted by valid reporting systems that indicate the tremendous value and contribution higher education provides to our society. Unfortunately, little has been done within the realm of higher education to develop such systems, or to truly reverse these negative impressions.

University administrators and faculty have not wanted to concern themselves with accountability issues.

The institutions of higher education that participated in this study have a lack of external, if any, reporting of faculty productivity. In those case where the reporting of faculty does exist, it was typically for the faculty member's benefit (tenure, promotion, merit raises), rather than for any type of financial-based accountability analysis. The traditional independent governance of each American university campus has resulted in the development of site-specific sets of productivity measures that serve only the internal evaluation needs of the particular institution. This constrained approach toward productivity reporting systems leads the authors to believe that these

institutions have not yet accepted the fact that they must truly demonstrate their accountability to their specific sponsors, and to the taxpayer in general.

There has been little insistence that expenditures of federal, state or private funds, or that measures of activity associated with the conduct of instruction, research, service or administration, should be related to measures of productivity, or that the results of that activity be externally reviewed, reported in detail and related to a social good.

But today's taxpayer has become more adamant in demanding accountability for his or her tax dollar. Currently, the Congress, states and the general public have a tendency to use time-based activity measures as a sole criterion of faculty productivity since other measures of productivity are not readily available from a central institutional office.

Unless institutions of higher education and faculty become accountable to their sponsors, and begin to develop, implement, and make external, as well as internal, reports based on measures of faculty productivity, they will continue to have the invalid measures imposed upon them by external sources.

As the demand for the provision of measures of accountability for the expenditure of public funds continues to gain momentum, it would be more appropriate to develop a reporting system that could properly serve external and internal accountability requirements. This study has been an attempt at the first phase toward developing an awareness of the need for such a reporting system. Though some of the institutions already have implemented such faculty productivity reporting systems, there is little external use of the resultant information.

It may be argued that many of the institutions of higher education that participated in this study currently have no established mechanism through which to document the productivity of their faculty, and that such a requirement would provide an extraordinary burden on the institutions. It would seem that in light of current computer capabilities, such a burden would appear insignificant in comparison to the monumental task of the time-and-effort reporting that was imposed on these institutions by the Federal government prior to the common use of computerized payroll and accounting systems.

With performance assessment measures being imposed on institutions of higher education across the United States by state legislatures, the need to rethink our institutions' criterion for faculty evaluation becomes increasingly more critical. Valid measures of productivity need to be developed and selected by the faculty and administrators within the institutions of higher education, rather than imposed by legislators who have a limited level of knowledge of the complex operations of higher education. Criterion supplied by faculty, as well as measures already in use by institutions of higher education (as reported in Figure 1), can form the base for the rethinking of faculty productivity reporting systems that meet the needs of the 21st century.

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